INCH-POUND

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SUPERSEDING
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PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, KLYSTRON
TYPE 7829A

This specification is approved for use by the Department of the Air Force and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: Reflex, integral cavity, 11.0 GHz, adjustable frequency, 60 mW, waveguide output, convection air cooled.

ABSOLUTE RATINGS:

Parameter:	Ef	Ers	Er	T_{body}	Alt.
Unit:	V	V dc	V dc	°C	ft
Maximum:	7.0	350	-500	200	10,000
Minimum:	5.7	----	1/	----	----

PHYSICAL CHARACTERISTICS:

Dimensions:	See figure 1.
Mounting position:	Any.
Output flange:	Mates with UG-39/U and UG-40/U.
Cathode:	Unipotential.

TEST CONDITONS:

Parameter:	Ef	Ers	Er	F
Unit:	V	V dc	V dc	MHz
	6.3	300 ± 3	-200 to 400	11,000 ± 5 4/

See footnotes at end of table I.

GENERAL:

Qualification - Required.

TABLE I. Testing and inspection.

Inspection	Method	Conditions	Symbol	Limits		Unit
				Min	Max	
Conformance inspection, part 1						
Cathode emission	4214	Ef = 5.7 V tk = 120 sec	ΔIk/Ik	----	15	%
Resonator current	1256	Er/max Po 1/	Irs	----	35	mA dc
Reflector voltage	4213	Power output 11/	Er	-270	-340	V dc
Mechanical tuning range	4223	Er/max Po, Tuner turns = 2.0 turns; Low frequency High frequency	 F F	 ---- 11,050	 10,950 ----	 MHz MHz
Power output	4250	Er/max Po; Er = -270 to -340 V dc 2/ 9/	Po	60	----	mW
Warmup time	4226	Po = 60 mW 3/	t	10	15	min.
Total reflector current	4229	8/ 10/	Ir	----	5	μA dc
Conformance inspection, part 2						
Heater current	1301	Ef = 6.3 V	If	350	500	mA dc
Temperature coefficient	4027	Er/max Po, TA = -10°C to + 40°C 6/	ΔF/ΔC	----	±200	kHz/°C
Conformance inspection, part 3						
Life test	----	Group D, Power output conditions 9/	t	500	----	hrs
Life test end point:	----					
Power output	4250	Er/max Po	Po	48	----	mW
Periodic check tests						
Temperature cycling	1027	Nonoperating, TA = -29° to +60°C 5/	Cycles	5	----	----
Variable frequency vibration	1031	G = 2.5; F = 20 to 50 Hz 7/	----	----	----	----

1/ the reflector voltage must always be negative with respect to the cathode by at least 20 volts.

2/ All oscillation tests, except vibration, shall be made with the tube rigidly connected to a UG-39/U flange on appropriate RF-52/U waveguide equipment and the load VSWR for the test shall be less than 1.1:1. All oscillation tests shall be under test conditions except where noted.

3/ With the tube body temperature stabilized at room temperature, 25° ± 5°C, and the reflector voltage set to the value obtained during performance of Method 4223, mechanical tuning, the tube shall meet specified conditions within the specified limits of warmup time.

TABLE I. Testing and inspection - Continued.

4/ The frequency shall be adjusted and measured under test conditions. The tube under test shall be stabilized for 10 minutes at:

Heater voltage	=	6.3 ± 0.2 V
Resonator voltage	=	300 ± 3 V dc
Ambient temperature	=	25° ± 5°C

5/ Tubes under test shall meet all specification tests after this test.

6/ The tube under test shall be operated at initial frequency, F = 11,000 ± 5 MHz, under Method 4250 conditions. The initial frequency shall be allowed to stabilize at practically constant ambient temperatures for at least 10 minutes. The rate of change of ambient temperature shall not exceed 2°C per minute.

7/ The tube under test shall be nonoperating and rigidly mounted on the vibration table. The frequency range, 20 to 55Hz, shall be traversed in approximately 1 minute. The motion shall be applied for a period of 30 minutes in each of the three mutually perpendicular planes, one of which shall be parallel to the axis of the beam.

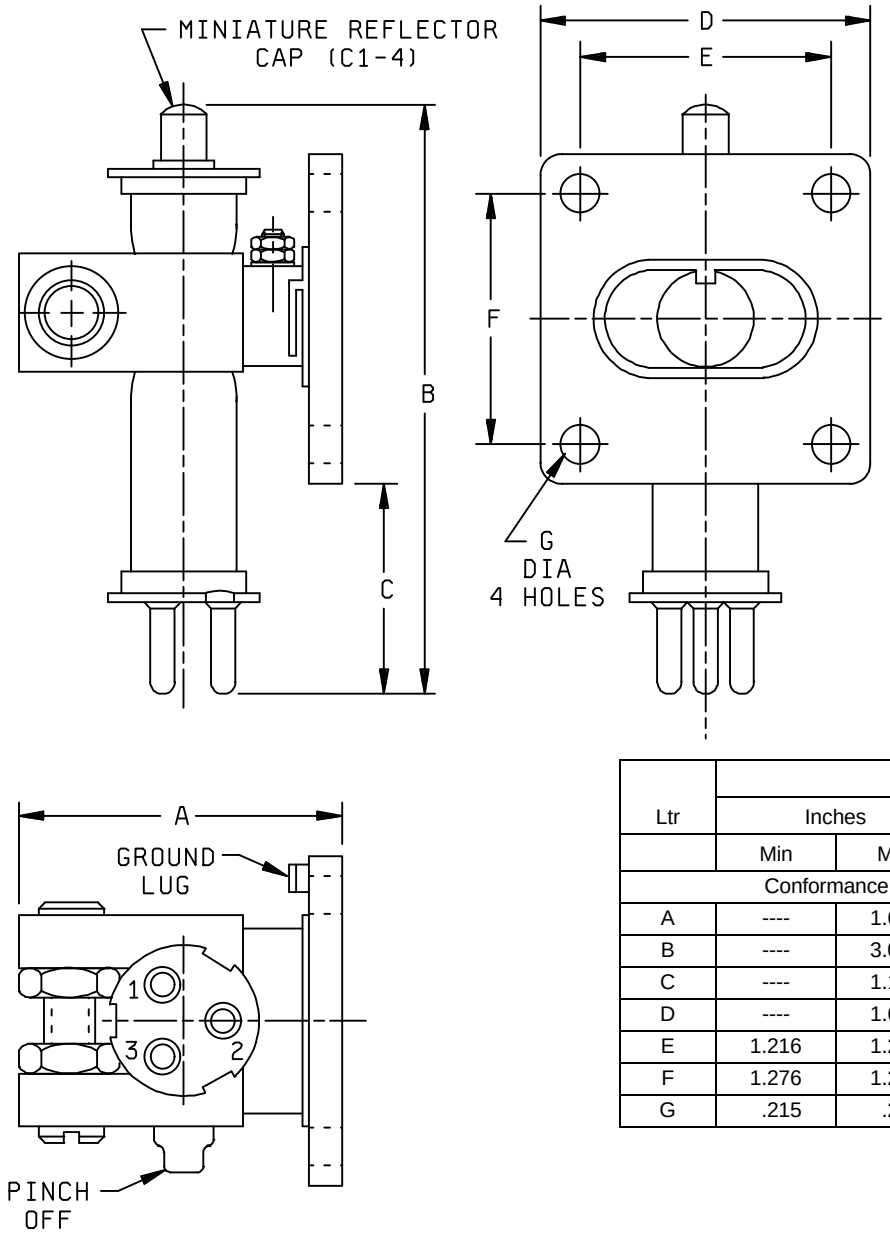
8/ The tube under test shall not be oscillating during this test.

9/ Forced air cooling shall not be used.

10/ Apply heater voltage for 2 minutes. Then apply other voltages plus heater voltage for 2 minutes and read the total reflector current at the end of the latter 2-minute period.

11/ The frequency shall be allowed to stabilize by operation at ambient temperature, 25° ± 5°C, for at least 10 minutes. After stabilization, the reflector voltage shall be adjusted for maximum power output. The frequency and reflector voltage shall be within the limits specified.

12/ For conformance inspection, part 1, acceptance level 0.65, inspection level II, one percent combined defective shall apply. For conformance inspection, part 2, acceptance level 6.5, inspection level L6 shall apply.



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 1				
A	----	1.625	----	41.28
B	----	3.000	----	76.20
C	----	1.125	----	28.58
D	----	1.650	----	41.91
E	1.216	1.224	30.89	31.09
F	1.276	1.284	32.41	32.61
G	.215	.225	5.46	5.72

Pin connections	
No.	Element
1	Heater
2	Cathode
3	Heater

NOTES:
1. Metric equivalents (to the nearest 0.01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.
2. JEDEC base type pee wee wafer base A3-108 for dimensional reference only.
3. Output connector mates with UG-39/U or UG-40A/U flanges.

FIGURE 1. Outline drawing of electron tube type 7829A

Custodians:
Air Force - 85

Review activities:
Air Force - 99

Preparing activity:
DLA - CC

(Project 5960-F242)